

Amendments to the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) Axial thrust balancing system (10) for a centrifugal compressor (12), having improved safety characteristics, the said centrifugal compressor (12) comprising a rotor (14) having impellers (16) adjacent to each other and connected by a shaft (18), the said rotor (14) rotating in a stator (20), the said centrifugal compressor (12) including a balancing piston (22), a balancing line (24) being provided between an intake of a first compression stage and an area downstream of the balancing piston (22), characterized in that it said system comprises an intake mechanical gas seal (26) around the said shaft (18) upstream of the said first compression stage and an outlet mechanical gas seal (28) downstream of the said balancing piston (22), the said balancing line (24) being closable by means of blocking elements (32).

2. (Currently Amended) ~~Balancing~~ A balancing system (10) according to Claim 1, ~~characterized in that the~~ wherein said mechanical gas seals (26, 28) are refilled with gas from a supply line (30).

3. (Currently Amended) ~~Balancing~~ A balancing system (10) according to Claim 1, ~~characterized in that the~~ wherein said blocking elements (32) comprise a shut-off valve.

4. (Currently Amended) ~~Balancing~~ A balancing system (10) according to Claim 1, ~~characterized in that the~~ wherein said outlet mechanical gas seal (28) is located at a delivery end of the said compressor (12) and has a function of balancing the said axial thrust.

5. (Canceled)

6. (Currently Amended) ~~Balancing~~ A balancing system (10) according to Claim 1, ~~characterized in that the~~ wherein said outlet gas seal (28) operates with a pressure on a primary ring equal to the delivery pressure of ~~the~~ said compressor (12).

7. (Currently Amended) ~~Balancing~~ A balancing system (10) according to Claim 1, ~~characterized in that~~ wherein, in high-pressure applications of ~~the~~ said centrifugal compressor (12), ~~the~~ said outlet mechanical gas seal (28) is refilled with a supply of gas at high pressure.

8. (Currently Amended) ~~Balancing~~ A balancing system (10) according to Claim 7, ~~characterized in that the~~ wherein said supply line (30) takes the gas from the delivery end of a diffuser of the final compression stage of ~~the~~ said centrifugal compressor (12), ~~immediately upstream of a scroll~~, and, through pipes external to ~~the~~ said centrifugal compressor (12), sends it to a high-pressure filter.

9. (Currently Amended) ~~Balancing~~ A balancing system. (10) according to Claim 8, ~~characterized in that the~~ wherein said gas, taken from ~~the~~ said delivery end of ~~the~~ said diffuser of ~~the~~ said centrifugal compressor (12), is returned into ~~the~~ said centrifugal compressor (12) at the positions of end labyrinth seals of ~~the~~ said centrifugal compressor (12), at the positions of primary rings of ~~the~~ said mechanical gas seals (26, 28).

10. (Currently Amended) ~~Balancing~~ A balancing system (10) according to Claim 1, ~~characterized in that~~ wherein uncertainties in the calculation of the pressures and in ~~the~~ specification of the diameters of ~~the~~ said mechanical gas seals (26, 28) can be compensated for by appropriate pressurization of ~~the~~ primary ring of ~~the~~ said outlet mechanical gas seal (28) and/or that of ~~the~~ said intake mechanical gas seal (26).

11. (Currently Amended) ~~Balancing~~ A balancing system ~~(10)~~ according to Claim 1, ~~characterized in that the~~ wherein said balancing piston ~~(22)~~ is keyed on ~~the~~ said shaft ~~(18)~~ of ~~the~~ said centrifugal compressor ~~(12)~~, downstream of the final compression stage.

12. (Canceled)